PB90-150905

Superfund Record of Decision (EPA Region 2): Caldwell Trucking Company, Fairfield Township, Essex County New Jersey (Second Remedial Action), September 1989

(U.S.) Environmental Protection Agency, Washington, DC

28 Sep 89

U.S. Department of Commerce
National Technical Information Service
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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The 11-acre Caldwell Trucking site is in Fairfield Township, Essex County, New Jersey. The site is situated on an extensive 100-year floodplain of the Passaic River and neighbors Deepavaal Brook and numerous wetlands, as well as residential and commercial properties. From the 1950s to 1984 the Caldwell Trucking Company dumped, and allowed others to dump, septic wastes into unlined lagoons and later into steel holding tanks at the site. An EPA investigation conducted between 1984 and 1986 revealed that onsite soil and a municipal well were contaminated with VOCs, PCBs, and metals. The investigation resulted in a 1986 Record of Decision (ROD) which provided for soil remediation, restoration of a municipal well, and residential hookups to municipal water. Ground water, however, remains contaminated because of a TCE-contaminated plume which extends 4,000 feet from the site towards the Passaic River. Additional sources of the plume have been identified, including the neighboring General Hose facility which will be addressed by other Federal and State authorities. A small seep to Deepavaal Brook's tributary, which is recharged by ground water, is also contaminated with TCE. This response is the second remedial action and addresses the remediation of contaminated offsite ground water. The primary contaminants of concern affecting the ground water are VOCs including TCE. (Continued on next page)

17. Document Analysis a. Descriptors

Record of Decision - Caldwell Trucking, NJ
Second Remedial Action - Final
Contaminated Medium: gw
Key Contaminants: VOCs (TCE)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 54
	20. Security Class (This Page) None	22. Price A04

(See ANSI-Z39.18) See Instructions on Reverse

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Department of Commerce

16. Abstract (Continued)

EPA/ROD/R02-89/096
Caldwell Trucking, NJ

The selected remedial action for this site includes pumping and treatment of offsite ground water using air stripping with offsite discharge to the Passaic River; installation of a drainage system to eliminate surface exposure to contaminated ground water; sealing ground water wells; and ground water monitoring. The estimated present worth cost for this remedial action is $11,540,000 which includes annual O&M costs of $315,000 for 30 years. If, however, access to private properties and public roads needed for implementation of this remedial action cannot be obtained, EPA and the State will implement a contingency remedy which includes limited treatment of ground water, remediation of surface water, and sealing ground water wells.

PB90-150905

United States
Environmental Protection
Agency

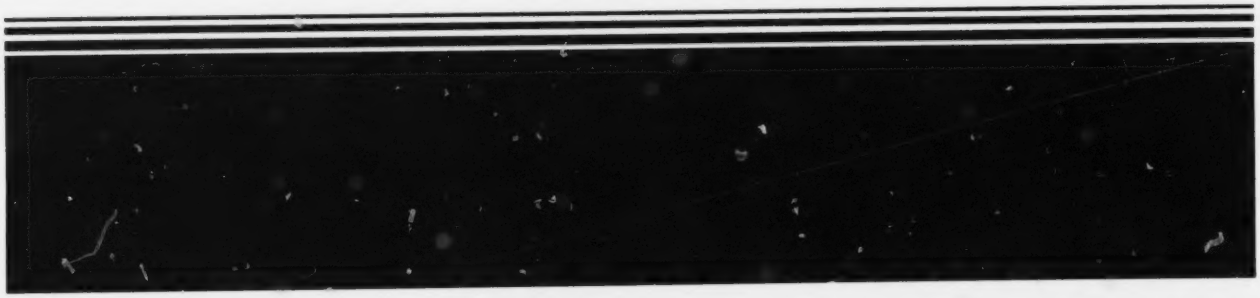
Office of
Emergency and
Remedial Response

EPA/ROD/R02-89/096
September 1989

EPA

Superfund Record of Decision:

Caldwell Trucking, NJ



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DECLARATION STATEMENT

RECORD OF DECISION

CALDWELL TRUCKING COMPANY (OFF-SITE AREAS)

Site Name and Location

Caldwell Trucking Company, Fairfield Township, Essex County, New Jersey

Statement of Basis and Purpose

This decision document presents the selected remedial action for the Caldwell Trucking Company (off-site areas), chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 and, to the extent applicable, the National Contingency Plan. This decision is based on the administrative record on file for the site.

The State of New Jersey has concurred with the selected remedy.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response actions selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Remedy

The remedial action described in this document represents the final of four planned operable units for the site and surrounding area. The first three operable units, which were the subject of a Record of Decision signed in September 1986, provided for source remediation, restoration of a municipal well, and residential hookups to municipal water. This final action will address contaminated ground water in the underlying aquifer.

The major components of the selected remedy include:

- Reduction in the Off-site Ground Water Plume
  A ground water pumping and treatment system will be undertaken to reduce contaminant levels in the affected aquifers, by implementing Alternative 3, or as a contingency, Alternative 6. In recognition of public concerns regarding Alternative 3, the Agency will work with the community to further define the extent of ground water cleanup and the number of wells employed.

- Remediation of a Seep and Tributary to Deepaval Brook
  An enclosed drainage system will be installed to eliminate the health risk posed by surface exposure to contaminated ground water if ground water pumping alone does not remediate the problem.

- Protection of Municipal Wells
  New monitoring wells will be installed near Municipal Well Number 6 and Municipal Well Number 8 for long-term monitoring purposes.

- Sealing of Wells in the Plume
  All wells impacted by contamination from the Caldwell Trucking site will be sealed.

Statutory Determinations

The selected remedy is protective of human health and the environment, and is cost-effective. However, a waiver is required from Federal and State standards for an aquifer designated as a source of drinking water. The waiver is invoked on the basis of technical impractability, since it would take more than one hundred years of pumping and treatment to attain drinking water standards in the affected aquifers.

The remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment that reduce toxicity, mobility, and/or volume as a principal element. Because this remedy will result in hazardous substances remaining in the ground water above health-based levels, a review will be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

William J. Muszynski, P.E.
Acting Regional Administrator

Sept. 28, 1989
Date

RECORD OF DECISION

DECISION SUMMARY

CALDWELL TRUCKING COMPANY (OFF-SITE AREAS)

SITE LOCATION AND DESCRIPTION

The Caldwell Trucking Company site is located in Fairfield Township, Essex County, New Jersey. The site is an 11.25-acre tract of land located in the eastern portion of the township, between O'Connor Drive and Sherwood Lane, immediately east of Passaic Avenue. Map coordinates for the site are latitude 40°53'23" north, longitude 74°16'16" west on the Pompton Plains 7.5-minute series quadrangle map. Fairfield Township itself is situated on an extensive floodplain of the Passaic River. The floodplain is a low-lying area of little relief with numerous swampy sections or wetlands which are gradually giving way to residential and commercial construction. Maximum relief between the floodplain and the crests of major hills approaches 400 feet. Elevations within the study area range from 154 feet to 240 feet above mean sea level (MSL). The 100-year flood elevation of the Passaic River in this area is 171.5 feet above MSL.

Deepavaal Brook and the Passaic River are the major surface water bodies within the study area. Deepavaal Brook flows to the northeast and discharges to the Passaic River. Average measured depths of Deepavaal Brook within the study area are approximately 3 feet and 6.5 feet under low-flow and high-flow conditions, respectively. Average measured depths of the Passaic River at mid-channel in the vicinity of the site are approximately 14 feet and 19.5 feet during low-flow and high-flow conditions, respectively. The average flow of the Passaic River is 1,160 cubic feet per second (cfs) at Little Falls, New Jersey, located 2 miles downstream of the study area.

Land usage within the Off-Site Remedial Investigation (RI) study area is predominantly residential. The residential areas are located in the northern portions of the study area which contains approximately 150 dwellings and an estimated 450 residents. As a result of the previous Record of Decision (ROD), all residences located within the known plume area will be hooked up to municipal water. Light industrial areas are concentrated mainly to the southwest and northwest. Approximately 45 small businesses are situated within a 1-mile radius of the Caldwell Trucking Company site. The Essex County Airport property is situated approximately 200 feet to the west of Passaic Avenue. Several of the businesses in the study area have process water supply wells.

The nearest community facility to the study area is the Essex Regional High School, located approximately 200 feet east of Caldwell Trucking Company. This school has approximately 1,800

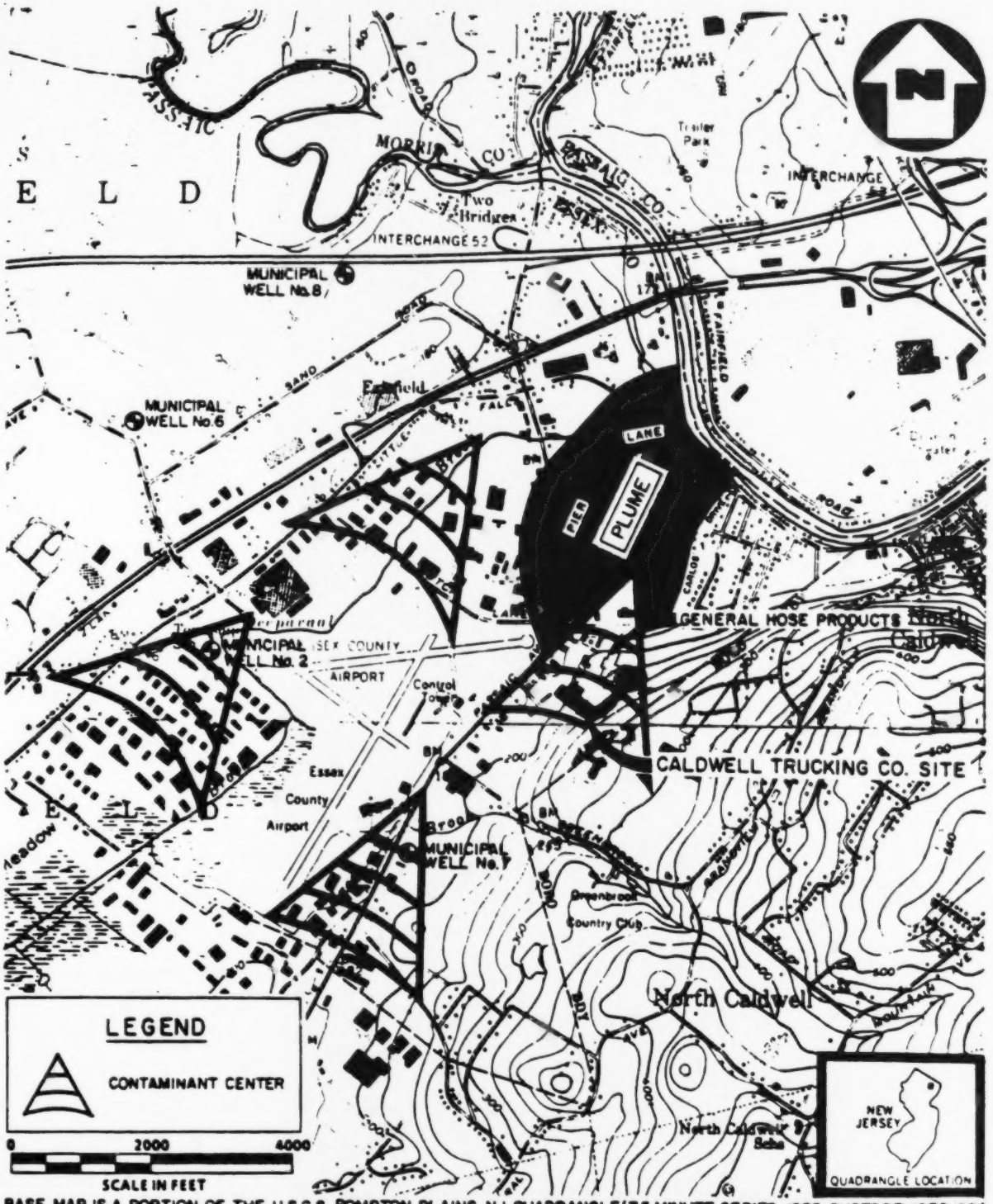
students, in grades 7 through 12. The areas served by the school include Fairfield, Roseland, North Caldwell and Essex Fells. The school is supplied water from the North Caldwell Water Department, which uses wells located in Essex Fells. Essex Fells is located approximately 3.5 miles south (upgradient) of the Caldwell site.

The natural resources in the study area include the Passaic River and the aquifers that supply ground water to municipal wells and private/industrial wells. The Passaic River is used as a water supply for communities downriver of the study area. The Passaic Valley Water Commission has a water intake located on the Passaic River, approximately 2.2 miles downstream of its confluence with Deepavaal Brook. This water commission serves approximately 750,000 people. Similarly, there is a water intake about 1 mile upstream of Deepavaal at the confluence of the Passaic and Pompton Rivers.

Fairfield Township is located at the extreme northern edge of the Buried Valley Aquifer System recharge zone. The recharge zone of this aquifer system underlies the central basin of the Passaic River in western Essex and southeastern Morris Counties. This aquifer system is designated as a sole-source aquifer, a designation which indicates that it is the sole or principal source of drinking water in the area.

Numerous residential wells north of the study area are no longer in use, and most of the residents now rely on municipal water. However, two Fairfield Township municipal wells (Nos. 2 and 7), south of the site, have been shut down since 1981 because of contamination. These wells were relatively high-yielding and provided a portion of the municipal water supply in Fairfield. The sources of contamination impacting these municipal wells are still under investigation.

Ground water within and in the vicinity of the study area has been affected by numerous identified or potential sources of contamination. Figure 1 illustrates the approximate locations of four known contamination centers that impact the study area. These include the Caldwell Trucking Company site (and the off-site ground water plume under study), contamination in the vicinity of Municipal Wells No. 2 and No. 7, and contamination west of the study area (bounded by New Dutch Lane, Passaic Avenue and Little Falls Road). There are approximately 130 properties undergoing New Jersey Environmental Cleanup Responsibility Act (ECRA) reviews in Caldwell and Fairfield Townships, and these will likely pinpoint specific sources within these four contamination centers.



BASE MAP IS A PORTION OF THE U.S.G.S. POMPTON PLAINS, NJ QUADRANGLE (7.5 MINUTE SERIES, 1955, PHOTOREVISED 1981) AND A PORTION OF THE CALDWELL, NJ QUADRANGLE (7.5 MINUTE SERIES, 1954, PHOTOREVISED 1981). CONTOUR INTERVAL 20'. SOURCE: EPA, 1989.

FIGURE 1
SELECTED MUNICIPAL WELLS AND CONTAMINANT CENTERS
FAIRFIELD TOWNSHIP, NEW JERSEY

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There are no known endangered species or critical habitats located within the study area. However, wetlands, as defined by the U.S. Department of the Interior, are located in several portions of the study area. A preliminary assessment of these areas was performed by the EPA and is summarized in the Remedial Investigation Report.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

In the early 1950's, Caldwell Trucking Company gradually acquired several lots to the rear of 222 Passaic Avenue which it used to deposit collected septic waste in unlined lagoons. During the next 30 years, Fairfield evolved from a residential community to one encompassing numerous commercial and industrial establishments. Since many parts of Fairfield were not hooked up to municipal sewers until the late 1970's, Caldwell Trucking hauled and deposited septic waste from all three classes of customers at its facility. In addition, Caldwell Trucking allowed other haulers to deposit their "septic" waste in the unlined lagoons on its property. Around 1973, Caldwell Trucking switched to the use of steel holding tanks and operated in that manner until 1984 when it discontinued use of the site for this purpose. In 1988, the company ceased the remainder of its trucking operations and went out of business.

Significant amounts of volatile organics were found to be in the septic waste deposited at the site, which in turn were released into the soil. The unlined lagoons became the primary source of contamination in the soil at the site (the subject of an earlier study), and in the ground water, which is the subject of the current study and this document. There are others sources of ground water contamination in the area, including the General Hose property, which is a neighboring property to the Caldwell site. In addition to the plume migrating from the Caldwell site, there are at least three other contaminant centers, or plumes, which ultimately overlap the Caldwell plume or pass west of it moving toward the Passaic River.

The site was placed on the National Priorities List (NPL) in December 1982. Between 1984 and 1986, EPA conducted the first Remedial Investigation and Feasibility Study (RI/FS) for the Caldwell Trucking site. The RI/FS was conducted to identify the types, quantities, and locations of contaminants, and to develop ways of addressing the contamination problems. The second or Off-Site RI/FS was conducted between 1987 and the present (1989). The results of the two RI/FSs are as follows:

First RI/FS

- An estimated 28,000 cubic yards of surface and subsurface soils were found to be contaminated with high levels of volatile organics and much lower concentrations of heavier organics, metals and some PCBs (polychlorinated biphenyls).

- A pump test found no direct connection between Caldwell Trucking and the contamination at Municipal Well No. 7. The test did show was that there were other potential sources, and that there were two (2) separate plumes.

- Based on the existing data on the downgradient plume, any homes (private wells) in that area would be hooked up to a municipal water supply.

Second (current) RI/FS

- A plume of contaminated ground water extends from the site to the Passaic River, approximately 4,000 ft. away. The plume is approximately 2,000 ft. wide and is found in both the water table and bedrock aquifers.

- Additional sources contributing to the plume were identified, including the neighboring General Hose facility.

- Additional plumes exist in close proximity to, and/or overlapping, the plume originating from the Caldwell site.

After a public meeting and a 30-day public comment period (on the first RI/FS), a Record of Decision was signed, on September 25, 1986, which selected remedial actions for the site itself, Municipal Well No. 7, and affected or threatened private wells. The 1986 ROD also required that a supplemental RI/FS be performed to investigate the downgradient plume and other potential sources of contamination.

The 1986 ROD called for the following:

- Excavation and treatment, via heat addition, of approximately 28,000 cubic yards of contaminated soils and waste materials.

- Disposal of treated soils in a secure landfill to be constructed at the site in accordance with Resource Conservation and Recovery Act (RCRA) requirements.

- Restoration of a lost potable water resource by providing treatment, via air stripping, of municipal public water supply well No. 7.

- Provision of an alternate water supply for residents potentially affected by ground water contamination from the site.

- Preparation of a supplemental remedial investigation and feasibility study to identify the extent and other sources of ground water contamination, and to develop and evaluate appropriate remedial alternatives.

Enforcement

The Caldwell Trucking site is the best known and most concentrated "source" of soil and ground water contamination in the Fairfield area. The Caldwell Trucking site was the point of deposition for a variety of waste generators. As previously noted, there are at least four discernable contaminant centers, and over 100 ECRA cases currently under review in Fairfield Township.

In the course of the first RI/FS (1985-86), Notice Letters were sent out to Caldwell Trucking Company, as well as the current and former owners of the neighboring property (General Hose). Caldwell provided a detailed response but denied any deliberate, willful acts leading to the contamination of its property. The other two parties disclaimed any involvement with Caldwell or any accidental contamination on their own property. However, the current Off-Site RI/FS revealed significant soil contamination on General Hose's property which in turn would make them a contributor to the ground water contamination. The data also suggests there may be a third principal source to the "Caldwell Plume", i.e., a neighboring property owned by Cobehn Inc., which was a major user of chloroform and is now undergoing an ECRA investigation.

As to the contaminant sources around Municipal Well No. 7, EPA and the State believe there are several Potentially Responsible Parties (PRPs) contributing to that plume, the most prominent being Cooper Industries. The facility in question was an old electric motor repair plant located in West Caldwell. EPA has been pursuing a voluntary settlement with Cooper for three years, but now Cooper Industries disclaims any connection with Well No. 7. Considerably less is known about the two remaining contaminant areas (one near Well No. 2, and the other north of the airport). Here, the State will provide the enforcement lead through its ECRA investigations.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Off-Site RI/FS Report and Proposed Plan related to the Caldwell Trucking Company site were released to the public for comment on August 2 and 16, 1989, respectively. These documents were made available to the public in both the administrative record and an information repository maintained at the EPA Docket Room in Region II as well as three outside repositories as follows:

Town Clerk's Office
230 Fairfield Road
Fairfield, New Jersey 07006
(201) 882-2700

Anthony Pio Costa Memorial Library
261 Hollywood Avenue
Fairfield, New Jersey 07006
(201) 227-3575

New Jersey Department of Environmental Protection
Metro Bureau and Regional Enforcement
2 Babcock Place
West Orange, New Jersey 07052
(201) 669-3900

The notice of availability for these documents was published in several newspapers, namely, THE NEWARK STAR LEDGER, THE PROGRESS, DAILY RECORD, and SUBURBAN LIFE in the week preceding the public meeting. A public comment period on the documents took place from August 16 to September 15. In addition, a public meeting was held on August 30, 1989. At this meeting, representatives from the EPA presented the results of the Off-Site RI/FS and the recommendation in the Proposed Plan, and later answered questions about problems at the site and the remedial alternatives under consideration. A response to the comments received during this period is included in the Responsiveness Summary, which is part of this ROD.

SCOPE AND ROLE OF PAST AND FUTURE RESPONSE ACTION

The problems at the Caldwell Trucking site are complex. As a result, EPA has divided the work into four phases or operable units (OUs). These are as follows:

- OU One: Contaminated or threatened private potable wells.
- OU Two: Contamination in Municipal Well No. 7.
- OU Three: Contamination in the soils at the site.

- OU Four: Contamination in the ground water downgradient from the site.

EPA has already selected cleanup remedies for OUs One, Two, and Three. OU Two and Three are in the remedial design stage, which means that engineering consultants are developing specific plans for implementation of the remedy. Municipal Well No. 7, which is contaminated, is not in use and is therefore not a direct public health threat at this time. OU One is underway and will essentially be completed by the end of September (1989). OU one involves connecting potentially impacted homes to municipal water, thus eliminating the only immediate public health risk. OU Two, the construction of wellhead treatment at Municipal Well No. 7, is scheduled for the early summer of 1990, and OU Three, remediation of the site, is projected for the late fall of 1990.

OU Four, the subject of this document, deals almost exclusively with off-site ground water contamination. While the primary objective was to study the plume extending from the site and its impact on the Passaic River, another objective included the investigation of the subsurface soils at General Hose Products, Inc., the adjacent property owner.

The investigation of the General Hose property indicated there were about 5,000 cubic yards of contaminated subsurface soils on the property which should be remediated. The remediation of this contamination is not being addressed under this Record of Decision, but will be pursued independently through appropriate Federal or State statutes.

SUMMARY OF SITE CHARACTERISTICS

Although the first RI/FS proposed affirmative remedial actions to clean up the site, provide an alternate water supply to properties with contaminated or threatened drinking water, and restore a public well to service - the data was deemed insufficient to characterize the downgradient plume and to determine its impact on the Passaic River. These issues were the basis of the present off-site study.

To characterize the plume, 12 ground water modelling points were selected, and a total of 34 wells were installed. The elevations selected were normally at the top and bottom of the water table aquifer (defined as Zones A and B), and two elevations of the bedrock aquifer (defined as Zones C and D). See Figure 2. The ground water sampling results from these points were entered into a computer model which produced the following results:

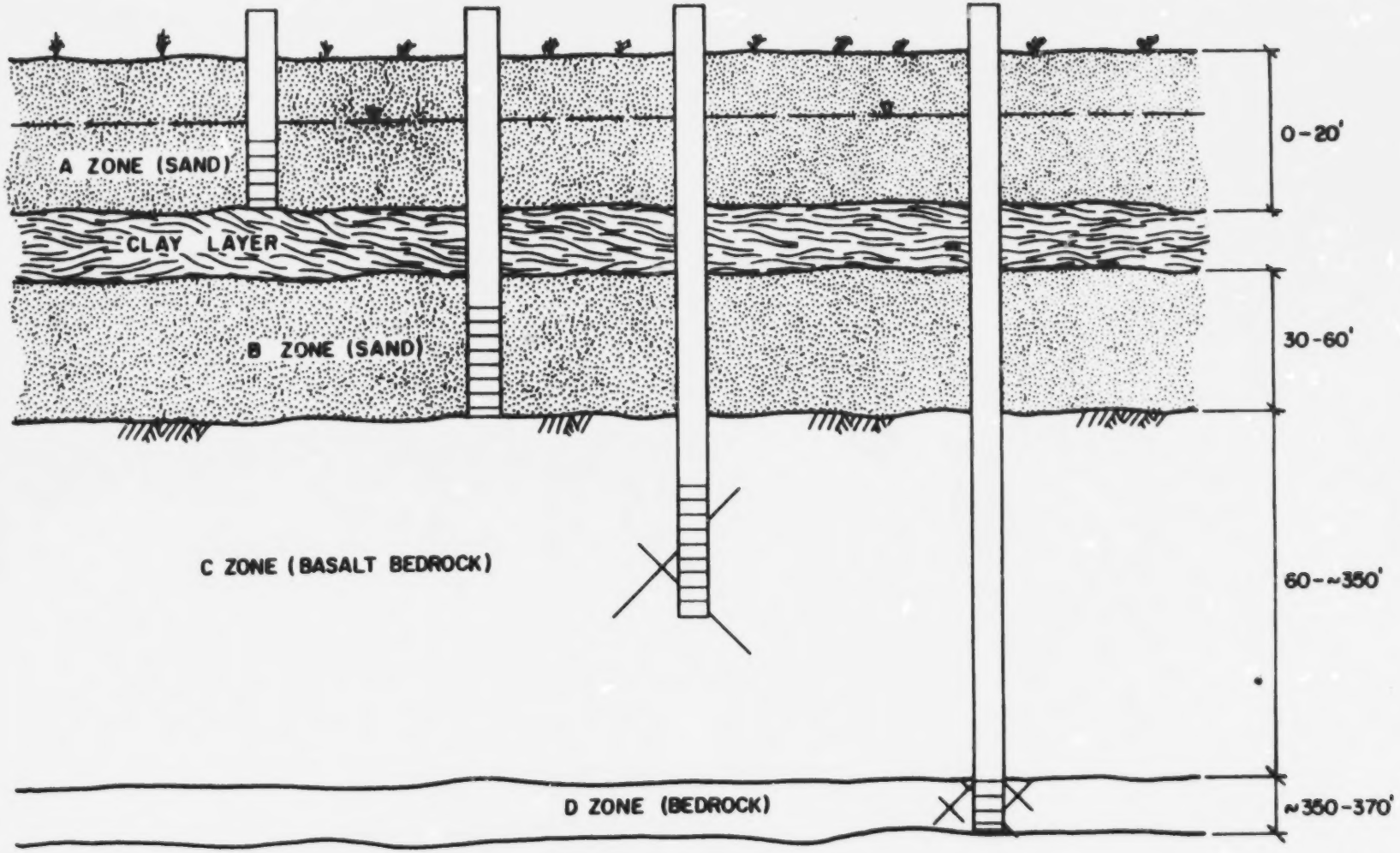
A ZONE (SAND)
CLAY LAYER
B ZONE (SAND)
C ZONE (BASALT BEDROCK)
D ZONE (BEDROCK)
0-20'
30-60'
60-~350'
~350-370'

FIGURE 2

- The ground water is contaminated with volatile organics, mainly trichloroethylene (TCE), from the top of the water table (A Zone) down into the bedrock as deep as 370 feet (D Zone). The horizontal area of contamination is about 4,000 feet long, from the site to the Passaic River, and about 2,000 feet wide, from Carlos Drive on the east to Passaic Avenue on the west.

- Based on the computer modeling, it is believed that the Passaic River is only minimally impacted by the plume at the present time, and the model projects further improvement after site remediation. At normal flow conditions, there does not appear to be a threat, even at present, to the use of the river as a source of drinking water. (River intakes are located one mile upstream and two miles downstream of the site.)

- The computer model was also used to construct isoconcentration lines for each of the four zones, and predict changes over time. For example, Figure 3 shows present day contaminant levels for Zone B, which range from 500 to 10,000 ppb.

As noted previously, there are other contaminant centers, or plumes, which are in close proximity to, or overlap the plume emanating from the Caldwell site. The present day impact of these plumes is included in the model. However, cleanup projections derived from the model for the Caldwell Trucking/ General Hose plume do not reflect the impact of additional contamination coming from other sources.

A small seep to the tributary of Deepavaal Brook, recharged by the ground water, was discovered and found to be contaminated with TCE in the range of 5 parts per million (ppm). The tributary itself was also contaminated with TCE.

SUMMARY OF SITE RISKS

Human Health Risks

During the RI/FS, an analysis was conducted to estimate the health or environmental problems that could result if the ground water contamination from the Caldwell site was not cleaned up. This analysis is commonly referred to as a baseline risk assessment. In conducting this assessment, the focus was on the health effects that could result from direct exposure to the contaminants as a result of ingestion of the ground water. The analysis focused on the major contaminant of concern, TCE, which is a volatile organic compound that is known to cause cancer in

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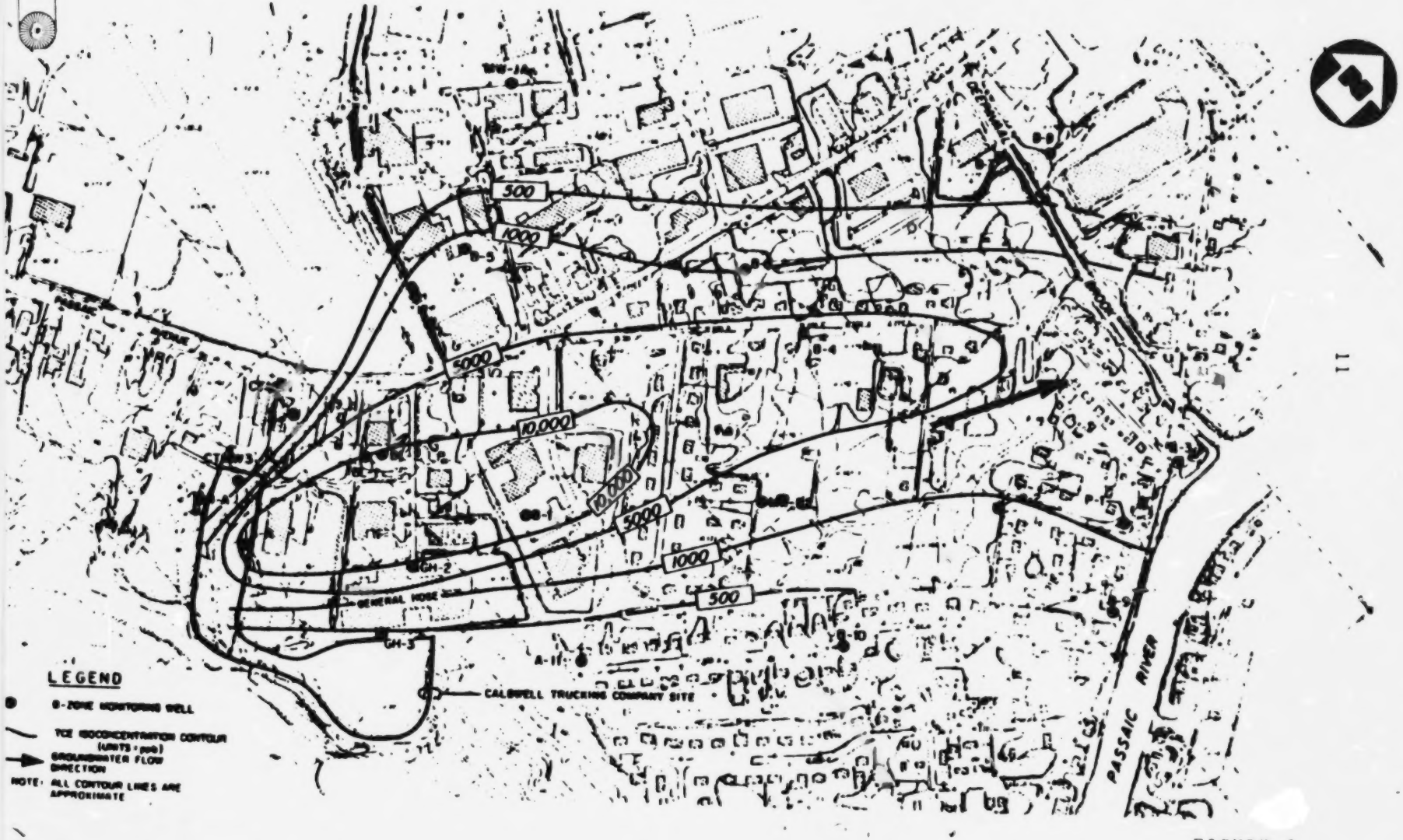


FIGURE 3

TCE CONTAMINATION (ppb) IN ZONE B - JUNE 1988
CALDWELL TRUCKING CO. OFFSITE RI/FS, FAIRFIELD TWP., NJ

NUS CORPORATION

laboratory animals and thus is classified as a carcinogen. It is a highly mobile contaminant that typically migrates through the soil into the ground water.

Cancer potency factors have been developed by EPA's Carcinogenic Assessment Group for estimating lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. Cancer potency factors, which are expressed in units of milligrams of carcinogen per kilogram per day $(mg/kg/day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen in mg/kg/day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper-bound" reflects the conservative estimate of the risks calculated from the cancer potency factor. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Cancer potency factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied.

Reference doses have been developed by EPA for indicating the potential adverse health effects from exposure to chemicals exhibiting noncarcinogenic effects. Reference doses, which are expressed in units of mg/kg/day, are estimates of lifetime daily exposure levels for humans, including sensitive individuals. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) can be compared to the reference dose. Reference doses are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). These uncertainty factors help ensure that the reference doses will not underestimate the potential for adverse noncarcinogenic effects to occur.

Excess lifetime cancer risks are determined by multiplying the intake level with the cancer potency factor. These risks are probabilities that are generally expressed in scientific notation (e.g., $1x10^{-6}$ or 1E-6). An excess lifetime cancer risk of $1x10^{-6}$ indicates that, as a plausible upper bound, an individual has a one in one million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a site.

Potential concern for noncarcinogenic effects of a single contaminant in a single medium is expressed as a hazard quotient (or the ratio of the estimated intake derived from the contaminant's reference dose). By adding the hazard quotients for all contaminants within a medium or across all media to which a given population may reasonably exposed, the Hazard Index can be generated. The Hazard Index provides a useful reference point

for gauging the potential significance of multiple contaminant exposures within a single medium or across media.

EPA's sampling of the ground water found that the average concentration of TCE was 5 parts per million. This concentration level is associated with an excess lifetime cancer risk of 3.4 X 10^{-3}. This means that if no cleanup action is taken by EPA, an additional 3.4 people per thousand have a chance of contracting cancer as a result of the exposure to the contaminated ground water. This estimate was developed by taking into account various conservative assumptions about the likelihood of a person being exposed to the ground water, and the carcinogenicity of TCE. This risk estimate is based in part on the present, and projected future, average concentration levels of TCE in each of the four zones (reference Table 1).

However, since the affected population will be provided with a public water supply, the remaining risks associated with the contaminated ground water involve the use of it for non-potable (non-drinking) purposes. There continues to be a potential risk associated with contact to the seep and the tributary of Deepavaal Brook.

Environmental Risks

As noted in the concluding paragraph of the Site Description, there are no known endangered species or critical habitats located in the plume area. However, there are many small scattered wetlands throughout the area which would be seriously impacted under certain remedial actions while other alternatives would have little or no impact on the wetlands. Hence wetlands play an important role in balancing the advantages and disadvantages of one alternative against another.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response actions selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF REMEDIAL ALTERNATIVES

The RI identified two environmental media that were impacted by the plume, i.e., the ground water itself and a small seep or surface water recharged by contaminated ground water. In the FS, three basic alternatives were considered: (1) No Action, (2) Remediation of the seep (alone) and improvement of the monitoring system, and (3) Pump and Treat the water table and bedrock aquifers. As the Pump and Treat option could be structured in various ways, it was expanded into three discrete

TABLE 1

AVERAGE TRICHLOROETHENE CONCENTRATION (µg/l) IN GROUNDWATER
NO-ACTION SCENARIO
CALDWELL TRUCKING COMPANY OFFSITE FS

Time (Years)	Zone			
	A	B	C	D
0	1,004	3,637	5,250	556.2
20	436.0	2,520	3,626	1,238
40	321.4	1,892	2,880	1,616
60	243.3	1,476	2,356	1,814
80	184.7	1,178	1,962	1,882
100	140.3	954.1	1,653	1,863
140	80.7	643.9	1,198	1,675
180	47.3	444.8	880.2	1,410
200	36.5	371.9	756.3	1,275

alternatives (3, 4, and 5), with the main variable being the size, number and location of the air strippers needed to remove the contaminants.

After an initial review by EPA and the New Jersey Department of Environmental Protection (NJDEP), when it was understood that it would take between 100 - 200 years to attain State drinking water standards under the full pump and treat schemes (Alternatives 3, 4, and 5), NJDEP suggested that two other (partial) remedies be included for review. Alternative 6 proposed pumping and treatment close to the site, where there is a band of higher contaminant levels, before the plume spreads out and down and becomes more dilute. The last alternative (No. 7) proposed to install a series of barrier wells at the north and western edges of the plume to confine its movement. The seven alternatives are listed below:

* Alternative 1: No Further Action with Monitoring.
* Alternative 2: Ground Water Use Restrictions and Surface Water Controls.
* Alternative 3: Ground Water Pumping, Treatment at the Caldwell Trucking Company Site, and Discharge to the Passaic River.
* Alternative 4: Ground Water Pumping, Treatment at Three Locations, and Discharge to the Passaic River.
* Alternative 5: Ground Water Pumping, Treatment near Fifteen Well Locations, and Discharge to Surface Water.
* Alternative 6: Partial Ground Water Pumping, Treatment at the Caldwell Site, and Discharge to Surface Water.
* Alternative 7: Pumping of Ground Water Barrier Wells and Discharge to Surface Water.

Alternative 1:
NO FURTHER ACTION WITH MONITORING

Capital Costs:	$ 30,000
Annual Operation and Maintenance (O&M) Costs:	$ 15,000
Present Worth:	$ 261,000
Implementation Period:	1 month

This alternative would not require implementation of specific remedial actions to address ground water and surface water contamination. Under this alternative, a long-term monitoring program would be implemented to determine whether ground water and surface water contaminant concentrations are changing with time, and to track the migration of contaminated ground water.

The monitoring program includes sampling the spring where ground water discharges to surface water, and sampling ground water from monitoring wells near the outer edges of the contaminant plume. Gradual attenuation of the plume will occur over time as a result of other source removal actions being planned (reference Table 1).

Alternative 2:
GROUND WATER USE RESTRICTIONS AND SURFACE WATER CONTROLS ONLY

Capital Costs:	$ 390,000
Annual O&M Costs:	$ 20,000
Present Worth:	$ 700,000
Implementation Period:	2 years

This alternative would not require removal or treatment of contaminated ground water or surface water. Under this alternative, administrative controls, such as ground water use restrictions in the affected area, would be implemented by the State and Fairfield Township as needed to prevent the use of ground water as a drinking water supply and any risks posed by non-potable uses. To reduce the potential for exposure, the spring and drainage pathway, where contaminated ground water discharges, would be filled with crushed stone and covered with a layer of soil. A long-term monitoring program similar to that proposed for the No-Action alternative would also be required. A review of all off-site wells would be made to determine their importance to the monitoring program, and to assist the Federal and State government agencies in identifying other sources of contamination affecting the quality of ground water in Fairfield.

In reviewing Alternative 2, concerns were raised involving the potential risks associated with continued use of the contaminated ground water for non-potable purposes and the risks associated with the potential exposure to the southern tributary of Deepavaal Brook. It is believed that some private wells within the contaminated plume from Caldwell Trucking, which have been replaced by municipal water, are still being used for non-potable (non-drinking) purposes, such as irrigation. This use of these wells still poses a potential health risk to the user through ingestion and inhalation. In addition, there is a threat of cross-contamination to the municipal supply if these contaminated wells continue to operate. Therefore, to remove the health risk to the user and the risk of cross contamination to the municipal supply, Alternative 2 will include the sealing of those wells in the contaminated (downgradient) plume which are still in operation or have been abandoned. Figure 3 provides some indication of the area of primary concern, namely those streets within the 500 parts per billion (ppb) contour lines.

In addition to the seep and its pathway, the southern tributary from that juncture to Deepavaal Brook is contaminated and poses a threat to human health. In order to remove this risk, Alternative 2 would provide an enclosed path (French drain or culvert) from that point on the tributary to Deepavaal Brook (see Figure 4).

In order to ensure that this remedy continues to be protective of human health and the environment, the above monitoring program would be expanded to include new well points to detect potential contamination approaching Municipal Wells Nos. 6 and 8 which are major public water sources.

This expanded Alternative 2 would increase the remedial costs shown in the FS as follows: raise capital costs from $105,000 to $390,000, annual O&M costs from $15,000 to $20,000, and present worth from $335,000 to $700,000. The implementation period for Alternative 2 would be increased to approximately 2 years.

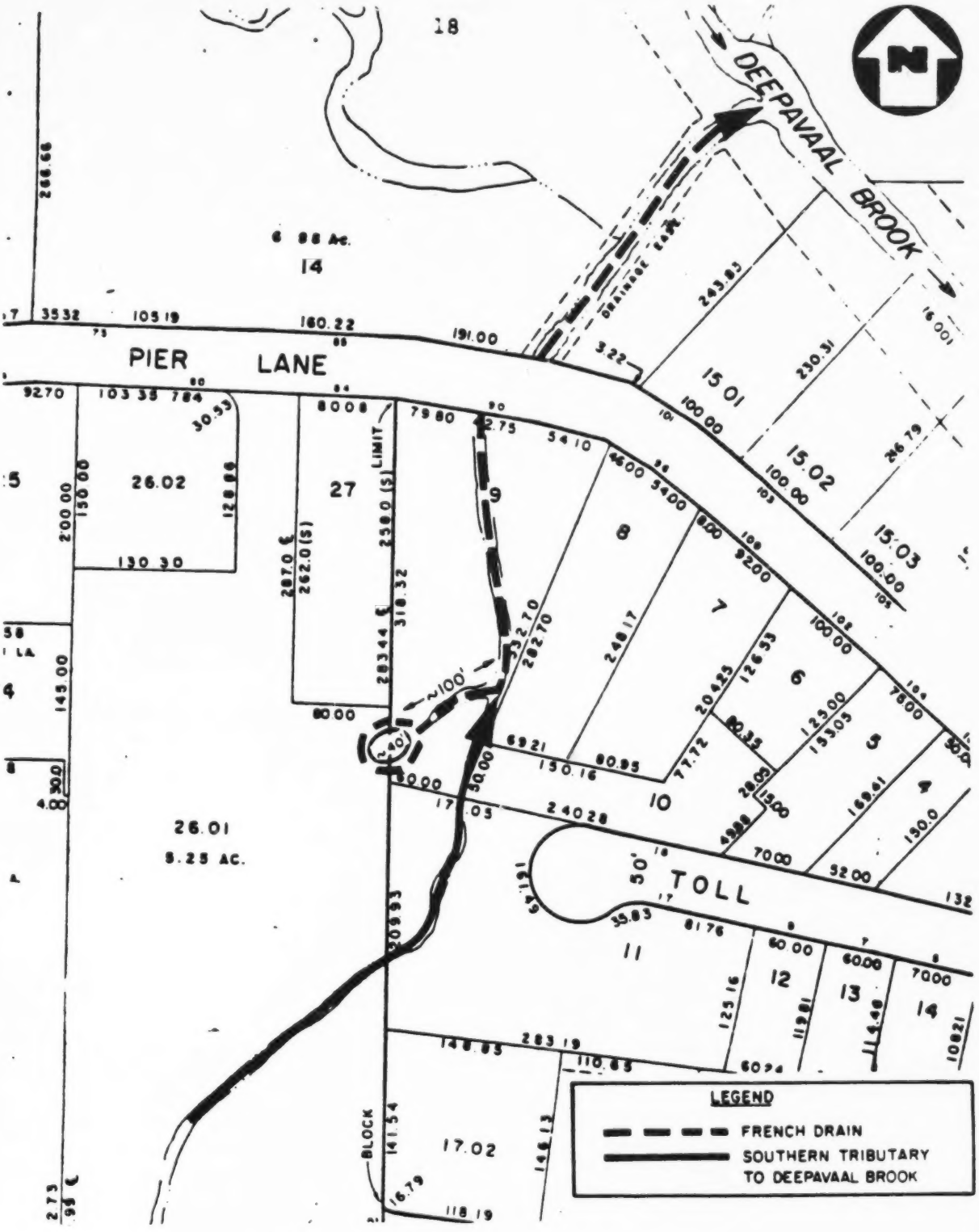
Alternative 3:
GROUND WATER PUMPING, TREATMENT AT THE CALDWELL TRUCKING COMPANY SITE, AND DISCHARGE TO THE PASSAIC RIVER

Capital Costs:	$ 6,700,000	$ 6,700,000
Annual O&M Costs:	$ 315,000	$ 315,000
Present Worth:	$ 11,540,000	$ 14,340,000
Implementation Period:	30 years	100 years

This alternative involves installation of ground water recovery wells equipped with pumps at 15 locations throughout the study area to intercept contaminated ground water throughout the vertical zones of contamination. The total pumping rate would be approximately 1.2 million gallons per day (MGD). An air stripper would be constructed at the Caldwell Trucking Company site to treat the extracted ground water. Appropriate pollution control systems would be installed to meet New Jersey air emissions regulations (NJAC 7:27).

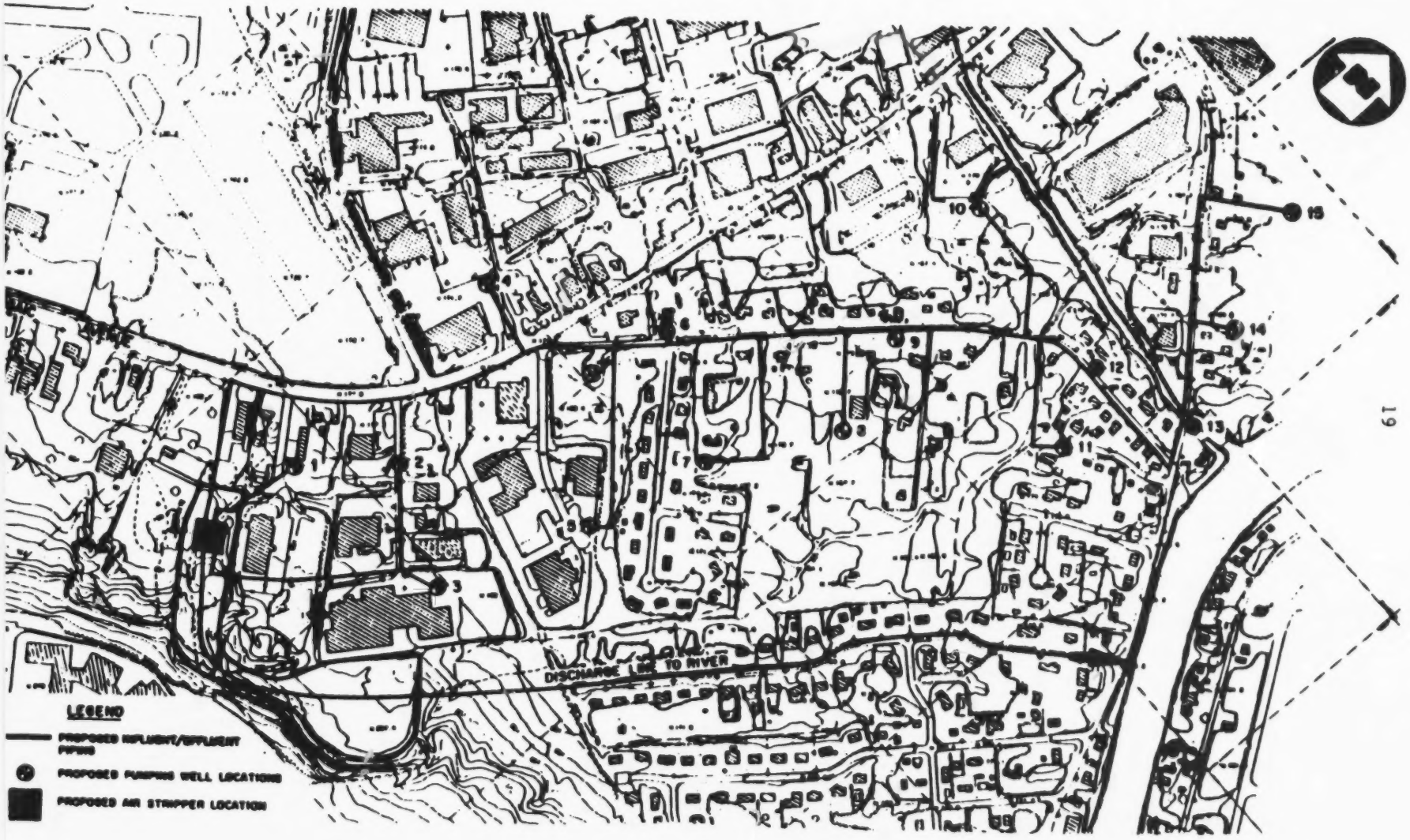
Influent piping would be installed between the wells and the air stripper, and an effluent pipeline would be constructed to the Passaic River (see Figure 5). The effluent will be treated to meet New Jersey surface water discharge regulations. Ground water pumping would lower the water table so that the spring would no longer discharge contaminants to the southern tributary of Deepavaal Brook. However, this would result in the water table being pulled down over the entire area, including scattered wetland acreage.

Table 2 shows computer derived projections of the estimated reduction in TCE from Caldwell Trucking, by pumping and treating for up to 200 years. According to the table, it would take over



ALTERNATIVE 2
SURFACE WATER CONTROL
CALDWELL TRUCKING CO. OFFSITE RI/FS,
FAIRFIELD TWP, NJ

FIGURE 4



ALTERNATIVE 3

SINGLE AIR STRIPPER AND PIPELINE LOCATIONS

CALDWELL TRUCKING CO. OFFSITE RI/FS, FAIRFIELD TWP., NJ

FIGURE 5

TABLE 2

AVERAGE TRICHLOROETHENE CONCENTRATION (µg/l) IN GROUNDWATER
GROUNDWATER EXTRACTION AND TREATMENT FOR 200 YEARS
CALDWELL TRUCKING COMPANY OFFSITE FS

Time (Years)	Zone			
	A	B	C	D
0	1,004	3,637	5,250	556.2
4	696.9	1,091	1,158	749.0
8	448.1	583.4	612.9	547.2
12	273.03	334.8	348.9	397.3
16	169.6	204.3	212.4	294.2
20	109.0	130.9	136.1	222.3
24	72.2	86.7	90.2	171.4
28	49.2	59.3	61.7	135.0
32	34.3	41.6	43.3	108.7
36	24.5	29.9	31.2	89.3
40	17.9	22.0	23.0	74.9
44	13.2	16.4	17.3	64.0
60	5.0	6.4	7.0	39.7
100	0.9	1.2	1.5	19.0
200	0.1	0.2	0.2	7.7

over 100 years for the ground water to be cleaned up to the State's drinking water standards of 1 ppb for TCE. Because of the extremely long time required to reach drinking water goals, and recognizing that there are other unknown sources contaminating the aquifer, EPA and NJDEP would implement this alternative for 30 years, to achieve an interim cleanup level which allows for potable use of the ground water with minimal treatment.

If drinking water standards were the objectives, the present worth and analysis for the 100-year implementation period for this and the following alternatives includes the discounted annual operation and maintenance, and the discounted capital investment which would be needed to replace equipment past its useful life.

Alternative 4:
GROUND WATER PUMPING, TREATMENT AT THREE LOCATIONS, AND DISCHARGE TO THE PASSAIC RIVER

Capital Costs:	$ 5,755,000	$ 5,755,000
Annual O&M Costs:	$ 333,000	$ 333,000
Present Worth:	$ 10,865,000	$ 14,290,000
Implementation Period:	30 years	100 years

This alternative is similar to Alternative 3. It involves the installation of ground water recovery wells at 15 locations throughout the study area to intercept the contaminated ground water. The total pumping rate would be approximately 1.2 million gallons per day (MGD). Three air strippers would be constructed near the following locations: (1) at the Caldwell Trucking Company site, (2) an area between Pier Lane and Passaic Avenue, and (3) north of, and in close proximity to, Deepavaal Brook. Each air stripper would treat water from five well locations. Influent piping would be installed between the wells and the air strippers. Effluent piping would be installed between the air strippers and the Passaic River. Even though this alternative involves 3 (smaller) strippers instead of one, shorter and smaller water gathering lines would save a million dollars in capital investment over Alternative 3. Ground water pumping would lower the water table at the spring, but would also result in lowering the water table in the scattered wetland areas. This alternative accomplishes the same remedial objectives as Alternative 3.

Alternative 5
GROUND WATER PUMPING, TREATMENT AT FIFTEEN WELL LOCATIONS, AND DISCHARGE TO SURFACE WATER

Capital Costs:	$ 7,700,000	$ 7,700,000
Annual O&M Costs:	$ 450,000	$ 450,000
Present Worth:	$ 14,665,000	$ 19,250,000
Implementation Period:	30 years	100 years

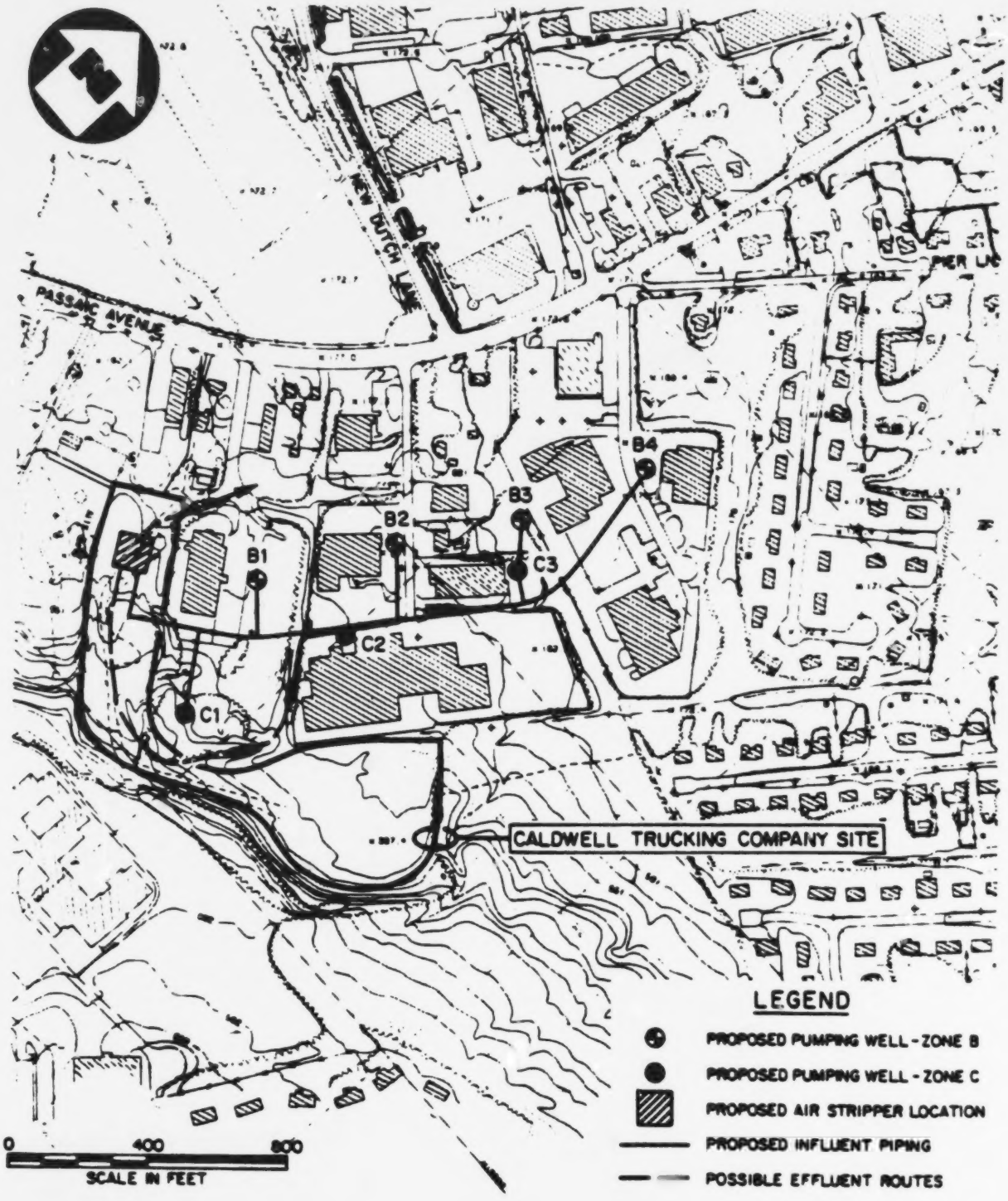
This alternative is similar to Alternatives 3 and 4 in that it involves the installation of ground water recovery wells at 15 locations throughout the study area to intercept and extract contaminated ground water. The total pumping rate would be approximately 1.2 MGD. Fifteen air strippers would be constructed; one at or near every pumping well location. Each air stripper would treat water at each well location. Short reaches of influent piping would be installed between each well location and the air stripper serving that location. Effluent piping would be installed between the air stripper and the local storm sewer system, which would receive the treated ground water. This alternative also would remediate the spring as a byproduct of the pumping. This alternative accomplishes the same remedial objectives as Alternatives 3 and 4.

Alternative 6
PARTIAL GROUND WATER PUMPING, TREATMENT, AND DISCHARGE TO SURFACE WATER

Capital Costs:	$ 2,020,000	$ 2,020,000
Annual O&M Costs:	$ 180,000	$ 180,000
Present Worth:	$ 3,700,000	$ 4,765,000
Implementation Period:	12 years	30 years

This alternative involves installation of ground water recovery wells equipped with pumps at seven locations to intercept contaminated ground water within the 10,000 ppb TCE contour in the lower water table aquifer and the upper bed rock aquifer. The total pumping rate would be approximately 0.25 MGD. An air stripper would be constructed at the Caldwell Trucking Company site to treat the extracted ground water. Appropriate pollution control systems would be installed to meet New Jersey air emissions regulations (NJAC 7:27). Influent piping would be installed between the wells and the air stripper, and an effluent pipeline would be constructed to the Passaic River, directly or via Deepavaal Brook (see Figure 6). The effluent will be treated to meet New Jersey surface water discharge regulations. Neither the wetlands nor the spring are likely to be impacted under this alternative.

Alternative 6, as presented in the Feasibility Study, considered pumping and treating the more highly contaminated ground water



ALTERNATIVE NO. 6: AIR STRIPPER, PIPELINE, AND WELL LOCATIONS - PARTIAL GROUNDWATER PUMPING
CALDWELL TRUCKING CO. OFFSITE RI/FS
FAIRFIELD TWP., NJ

FIGURE 6

NUS CORPORATION

for 12 years, to reduce the level of TCE entering the extraction wells from 10,000 ppb to 5,000 ppb, and thereby reducing the average TCE concentration throughout the aquifer. Alternative 6 could be modified, to continue the pumping and treatment of these areas for 30 years, to reduce the level of contaminants even further. It is estimated that by pumping and treating for approximately 30 years, the level of contamination can be reduced such that the lower bedrock aquifer would not be further degraded, and potable water could be attained with moderate treatment. Aquifer cleanup levels attainable for any time frame (12, 30, or 100 yrs) under this scenario are identified in Table 3.

Alternative 7
PUMPING OF GROUND WATER BARRIER WELLS AND DISCHARGE TO SURFACE WATER

Capital Costs:	$ 1,510,000
Annual O&M Costs:	$ 138,000
Present Worth:	$ 3,625,000
Implementation Period:	100 years plus

This alternative involves installation of ground water barrier wells equipped with pumps at four locations near the leading northwestern edge of the ground water contaminant plume in the bedrock aquifer. The wells would attempt to prevent further migration of contaminated ground water. The total pumping rate would be approximately 0.75 MGD. Piping would be installed between the wells and the Passaic River. Treatment would not be required, possibly for decades, since the wells would be located at the leading edge of the contaminant plume. However, as ground water contaminants migrate from more heavily-contaminated areas of the plume toward the barrier wells, contaminant concentrations would be expected to increase, and thus treatment might be required in about 40 years. Under this alternative, there would be a minor impact on the wetland water levels.

TABLE 3

AVERAGE TRICHLOROETHENE CONCENTRATION (µg/l) IN GROUNDWATER PARTIAL GROUNDWATER EXTRACTION AND TREATMENT (200 YEARS) CALDWELL TRUCKING COMPANY OFFSITE FS

Time (Years)	Zone			
	A	B	C	D
0	1,004	3,637	5,250	556.2
4	341.7	2,746	3,386	1,049
8	217.9	1,882	2,390	1,101
12	153.4	1,352	1,807	1,047
16	117.1	1,057	1,439	971.9
20	94.7	848.3	1,194	899.9
24	79.8	704.9	1,022	836.2
28	69.2	602.2	896.9	781.7
32	61.3	526.4	802.4	735.6
36	56.5	510.3	756.1	708.7
40	51.7	494.2	709.7	681.7
44	46.7	469.6	664.1	655.7
60	40.9	426.4	603.2	620.2
100	28.4	318.6	453.9	529.9
200	15.6	182.7	258.0	362.2

SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

In accordance with the National Contingency Plan, a detailed analysis of each remedial alternative is conducted with respect to each of nine detailed evaluation criteria. All selected remedies must at least attain the Threshold Criteria. The selected remedy should provide the best trade-offs among the Primary Balancing Criteria. The Modifying Criteria were evaluated following the public comment period.

Threshold Criteria

- Overall Protectiveness of Human Health and the Environment - This criterion evaluates the adequacy of protection that the remedy provides while describing how risks are eliminated, reduced or controlled through treatment, engineering controls, and/or institutional controls.

- Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) - This criterion addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes and/or provide grounds for invoking a waiver.

Primary Balancing Criteria

- Reduction of Toxicity, Mobility, or Volume (TMV) - This criterion addresses the anticipated treatment performance of the remedy.

- Short-Term Effectiveness - This criterion addresses the period of time required to achieve remedial goals and the risks to human health and the environment during the remedial action.

- Long-Term Effectiveness and Permanence - This criterion evaluates the magnitude of residual risk and the ability of the remedy to maintain reliable protection of human health and the environment over time once remedial goals have been attained.

- Implementability - This criterion examines the technical and administrative feasibility of executing a remedy, including the availability of materials and services needed to implement the chosen solution.

- Cost - This criterion includes the capital and operation and maintenance costs of the remedy.

Modifying Criteria

- State Acceptance - This criterion indicates whether, based on its review of the Operable Unit Two Feasibility Study and Operable Unit Two Proposed Plan, the State of New Jersey concurs with, opposes, or has no comment on the preferred alternative.

- Community Acceptance - This criterion evaluates the reaction of the public to the remedial alternatives and EPA's Proposed Plan. Comments received during the public comment period and EPA's responses to those comments are summarized in the Responsiveness Summary attached to this document.

Analysis

This section discusses and compares the performance of the remedial alternatives under consideration against the nine criteria.

Overall Protection

All of the alternatives, with the exception of the "No Action" alternative, would provide some protection of human health by eliminating, reducing or controlling risk through treatment, engineering controls, or institutional controls. Full protection of the environment would vary, according to the alternative selected. Alternative 3 (30-year option) would reduce the risk from using the ground water by reducing the level of contaminants within the affected aquifer to an interim concentration which would allow the aquifer to be used for potable water with minimal treatment.

Alternatives 3, 4, and 5 (100-year option) would attempt to reduce the level of contaminants to drinking water levels and would be considered fully protective. Alternative 6 would reduce the highly contaminated area of ground water to prevent the least contaminated zone, the lower bedrock aquifer, from degrading further, and would allow the aquifer to be used for potable water with moderate treatment. Alternative 2 is protective through institutional controls on the use of groundwater, and by restricting exposure to the seep and the tributary. Alternative 7 protects against future migration only.

The "No Action" alternative does not provide any additional protection to that provided by the previous 1986 ROD and, therefore, is not considered further in this analysis of options.

Compliance with ARARS

Alternatives 3, 4, and 5 (100-year option) are designed to meet Federal and State drinking water standards (ARARs) after their 100-year implementation periods are completed. At that time, the ground water would meet present day standards. Alternatives 3, 4, 5 and 6 (30-year option) are designed to achieve interim concentration levels such that, after 30 years, the ground water could be used for potable purposes with either minimal or moderate treatment. In these four alternatives, the treated ground water (effluent) will meet New Jersey surface water discharge regulations, and the off-gas from the treatment units will meet the NJAC 7:27 air emission regulations directly, or through the use of appropriate pollution control systems.

Alternatives 2 and 7 do not address the attainment of drinking water standards in the aquifers.

There are some scattered wetlands in the area which will be affected by actions taken to remediate the ground water. Alternatives 3, 4, and 5 will have significant impacts on these wetlands, while Alternatives 2, 6, and 7 would have minimal, if any, impacts. Accordingly, Alternatives 3, 4, or 5 would require compliance with the conditions of a New Jersey Fresh Water Wetlands Permit equivalent and Federal Executive Order 11990.

Long-term Effectiveness and Permanence

Alternatives 3, 4, and 5 (30-year option) would provide long-term protection by reducing the ground water to levels which could be used for potable purposes with minimal treatment.

Alternative 6 is designed to reduce the level of contamination only in areas with high levels of TCE. However, the levels of contamination would be significantly reduced and would prevent further degradation of the aquifer. Also, after 30 years, the ground water could be used for potable purposes with moderate treatment.

Alternatives 3, 4, and 5 (100-year option) are designed to return the aquifer to use as a source of public water after their 100-year implementation periods are completed. These three alternatives provide the best options for long-term effectiveness and permanence once drinking water standards are met.

Alternative 7 has a limited goal of keeping the plume from migrating toward Municipal Well No. 8, which is still clean. While the Caldwell plume would be intercepted for as long as the pumps are in use, these wells would not protect Well No. 8 from other plumes passing behind them (to the west).

Alternative 2 provides long-term protection in controlling the ground water seep and the southern tributary to Deepavaal Brook. This alternative also provides permanent protection against cross contamination of municipal water through a well sealing program.

Reduction of Toxicity, Mobility, or Volume of the Contaminants Through Treatment

Alternatives 3, 4, 5, and 6 (30-year option) would reduce the toxicity, mobility, and volume of the contaminated ground water through long-term treatment.

Alternatives 3, 4, and 5 (100-year option) afford the most complete reductions through treatment of contamination over the long implementation periods necessary under those options. Alternative 6 would significantly reduce concentrations in the most highly contaminated area of the plume such that drinking water standards could be achieved with moderate treatment. Alternative 7 controls the mobility (direction) of the plume to some extent, but does not achieve permanence. Alternative 2 does not involve any treatment systems.

Short-term Effectiveness

The major risk associated with the contaminated ground water is the use of it for potable purposes. Provision of an alternate water supply for the affected area is being accomplished under the 1986 ROD. Therefore, this risk will be significantly reduced. Alternatives 3, 4, and 5 (30-year option) would reduce the level of contamination in the affected aquifer to acceptable levels within the shortest time frame for potential future use as potable water with minimal treatment.

Alternative 6 would be highly effective in the short-term because it is applied to the most concentrated area of the plume.

Alternative 2 would be the most effective alternative in the short term, by quickly remediating the seep and implementing a well sealing program.

Alternative 7 has no short-term advantages.

Alternatives 3, 4, and 5 (30-year option) may have a significant impact on the wetlands in the area because of the draw down of the water table. However, Alternatives 3, 4, and 5 (100-year option) would continue this impact for a much longer time frame. Alternatives 2, 6, and 7 would not impact the wetlands.

None of the listed alternatives should create any short-term, health-related concerns for the public. All of the alternatives

that involve well drilling will require protection for workers at drilling sites.

Implementability

While Alternative 3 (30-year option) is the most desirable, there are serious implementation problems associated with it.

In order to effectively capture the ground water and treat it at a rate and volume to achieve the stated goal, approximately 15 well fields must be installed throughout the community. Because of the density of the area, it is likely that a number of these well fields would need to be located on residential properties. These well fields would consist of a number of wells at each location, pumps and other equipment, as well as a building to house the equipment, if necessary. Since the impact on private property owners might be significant, obtaining access to these properties may be extremely difficult and time consuming.

Written and oral comments were received during the public comment period which indicate a strong preference for Alternative 6 rather than Alternative 3 because it has less impact on residential properties.

In addition to the well field location difficulties, there is also a potential for encountering difficulty in obtaining access to install the pipe lines from the well field locations to the central treatment plant at the site and the effluent pipe from the treatment plant to the Passaic River. These lines will have to run along and cross fully developed roads and highways.

Alternative 3 (30-year option) is preferred over Alternatives 4 and 5 (30-year option) because it would be more implementable. Alternatives 4 and 5 include multiple treatment plants at well head locations, which would increase the impact on the private property owner and would require operation and maintenance of many treatment plants instead of one.

Implementation of Alternative 6 is also dependent upon the access of property to place wells within the area of highly contaminated ground water and the access to rights-of-way for pipelines from the wells to the treatment plant at Caldwell and from the site to the Passaic River. Of all the alternatives which involve pumping and treatment of ground water, however, Alternative 6 may offer the best opportunity for implementation since it requires the placement of wells on only six, primarily commercial, properties. The other pump and treat alternatives require a minimum of 15 locations, many of which are in residential areas. Alternatives 3, 4, 5, and 7 all involve implementation periods of 100 years or more for the longer time period option. During that time, the equipment will require maintenance, parts, and possibly complete

replacement, since the pumps must be in use continually. Even underground piping may need to be replaced.

Alternative 2 can be fully implemented with minimum difficulty.

Cost

	Costs in thousands of dollars		
Alternative	Capital Costs	Annual O & M	Present Worth
No. 2	390	20	700
No. 3	6,700	315	11,540
No. 4	5,755	333	10,865
No. 5	7,700	450	14,665
No. 6	2,020	180	4,765
No. 7	1,510	138	3,625

State Acceptance

The State of New Jersey supports both the preferred and contingency remedies presented in this document.

Community Acceptance

Community acceptance of the preferred alternatives was evaluated after the public comment period. Oral and written comments were received which indicate a strong preference for Alternative 6 rather than Alternative 3. Comments raised at the public meeting and during the public comment period are summarized in the attached Responsiveness Summary.

SELECTED REMEDY

EPA and NJDEP believe that the contaminant levels in both aquifers should be reduced as far as practicable. Alternative 3 (30-year option) would substantially reduce these levels in the affected portions of each aquifer through pumping and treatment. This would result in a level of concentration in the aquifers that would allow them to be utilized for potable purposes with minimal treatment in a reasonable time frame. Therefore, it is believed to provide the best balance among alternatives with respect to the evaluation criteria. However, it is recognized that implementation of this alternative is dependent on obtaining

access to the private properties needed for the well field locations, and to public roads for construction of the pipelines.

Owners of 33 private homes in the access area stated their opposition to wells on residential properties during the public comment period. Therefore, if access to the properties needed for implementation of Alternative 3 (30-year option) cannot be obtained, EPA and NJDEP will attempt to implement a contingency remedy of Alternative 6 (30-year option) and Alternative 2. Alternative 6 would reduce the level of contaminants such that potable water could be obtained with a moderate amount of treatment. Expanded Alternative 2 would remediate the seep and the southern tributary, provide new monitoring wells to safeguard Municipal Wells No.6 and No.8, and institute a well sealing program.

While implementing any remedy for the cleanup of ground water affected by the Caldwell Trucking Company, it will be necessary to address other sources of contamination and other plumes in the area to ensure that the desired cleanup of the ground water can be achieved. These other sources and plumes would be addressed under Federal and State authorities other than CERCLA.

Currently, it is believed that private wells may still exist in the area of affected ground water contamination, even though an alternate water supply is available for potable use. Because of the threat to human health associated with the use of this ground water for non-potable purposes and the potential for cross-contamination to the municipal supply, the selected alternative would also include sealing of such wells in the central plume area.

Based on the information available at this time, EPA and the State of New Jersey believe both the preferred alternative and the contingency alternative would be protective of human health and the environment, would be cost-effective, and would utilize permanent treatment technologies or resource recovery technologies to the maximum extent practicable. Because they would treat the contaminants in the ground water, the above remedies also would meet the statutory preference to employ treatment as a principal element.

STATUTORY DETERMINATIONS

EPA's selected alternatives for plume remediation comply with the requirements of Section 121 of CERCLA as amended by the Superfund Amendments and Reauthorization Act. Both the preferred remedy (Alternative 3) and the contingency remedy (Alternatives 6 & 2) are protective of human health and the environment in the short-term through institutional controls, and in the long-term as pumping and treatment substantially reduces the health and

environmental risks. While there are no unacceptable risks throughout the implementation period, the remedies differ in several respects. The preferred remedy treats a greater volume of ground water and therefore attains lower interim contaminant levels in the aquifer after 30 years. However, with regard to the seep, Alternative 2 of the contingency remedy eliminates the risk immediately and, through the installation of new monitoring wells, would safeguard the existing public water supply.

The ARARs identified for the ground water are the Federal and State Safe Drinking Water Act MCLs (Maximum Contaminant Levels). Due to the extent and concentration of the ground water plume, and the impact of other sources in the Fairfield area, it would take more than 100 years to clean the aquifer to drinking water standards. Accordingly, a waiver is invoked under this Record of Decision based on technical impractability, namely, that these MCLs are not attainable within a rational time-frame. These conditions, and therefore the waiver, would apply equally to both the preferred and contingency remedies. The treatment facilities employed under both remedies would comply with State ARARs governing air emissions and effluent discharges to surface waters. The preferred remedy may require special conditions or offsets to meet Executive Order 11990 (Federal ARAR) and a State wetlands permit equivalent. The contingency remedy meets these ARARs.

Both the preferred and contingency alternatives are projected to be cost-effective in terms of achieving both short-term and long-term cleanup goals for the ground water. However, since Alternative 6 concentrates solely on the most contaminated portions of the plume, and Alternative 2 remediates the seep immediately, the contingency remedy is the most cost-effective of the two.

Both the preferred and contingency alternatives utilize permanent solutions and treatment technologies in remediating the contamination in the ground water. The pump and treat schemes specified under these remedies will significantly reduce the toxicity, mobility, and volume of the contaminants found in the ground water, thus bringing the aquifer much closer to its purpose as a source of drinking water. Alternative 2 of the contingency remedy provides monitoring wells to permanently safeguard the existing public water supply.

Public comments were received which suggested that Alternative 3 could not be implemented, but were supportive of the contingency remedy (Alternatives 6 and 2) presented in this Record of Decision.

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

CALDWELL TRUCKING COMPANY (OFF-SITE AREAS)
FAIRFIELD TOWNSHIP
ESSEX COUNTY, NEW JERSEY

I. OVERVIEW

The U.S. Environmental Protection Agency (EPA) held a public comment period from August 16, 1989 through September 15, 1989 for interested parties to comment on EPA's final Remedial Investigation and Feasibility Study (RI/FS) and Proposed Plan for the Caldwell Trucking Company (Off-Site Areas).

EPA held a public meeting on August 30, 1989 at the Fairfield Township Municipal Building in Fairfield, New Jersey to describe the remedial alternatives and present EPA's preferred and contingency remedial alternatives for the Caldwell Trucking Company site and to update the public on the implementation of the 1986 Record of Decision.

A responsiveness summary is required for the purpose of providing EPA and the public with a summary of citizens' comments and concerns about the site as raised during the public comment period, and EPA's responses to those concerns. All comments summarized in this document were given full consideration in selecting both the preferred remedy and contingency remedy for the Record of Decision.

II. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

The Caldwell Trucking Company site initially became an issue of public concern during the early 1980's when results of a 1980-1982 NJDEP well sampling program revealed residential and commercial well contamination. In February 1982, the Fairfield Township Engineering Department notified residents with contaminated wells that they should limit their well water usage to bathing and household uses. Residents were provided with a location to obtain water for drinking and cooking. In 1982, Fairfield Township extended public water supply lines to the area that had been affected by residential well contamination and offered the first round of connections at a reduced fee.

Major issues and concerns expressed by the Community regarding the Caldwell Trucking Company site are as follows:

- Remedial Action Concerns

  In the past, residential, commercial and industrial property owners expressed a number of concerns related to the use of their land for monitoring wells. Owners are now expressing those same concerns in relation to the use of their property for pumping wells. Additional concerns are being voiced because of the long periods of time that would be needed for completion of this action. Specifically, owners are worried about the negative effects resulting from the installation of pumping wells. These include: reduced property values and marketability, liability coverage, restrictions on the use of their property, aesthetics, and the credibility of long term governmental commitments for property restoration.

- Human Health Concerns

  Residents have expressed concern over the potential adverse health effects from the consumption and use of contaminated well water. Residents have also asked about Federal or State funding to connect to municipal water once their wells are found to be contaminated.

- Migration of Contaminant Plume

  In the past, local officials and residents have expressed concerns regarding the potential for additional municipal and residential well contamination by off-site ground water contamination plume migration.

III. SUMMARY OF MAJOR QUESTIONS AND COMMENTS RECEIVED DURING THE PUBLIC MEETING AND EPA RESPONSES.

Comments made during the August 30, 1989 public meeting for the Caldwell Trucking Company site are summarized in this section are summarized below and organized into the following categories:

A. Feasibility of Alternatives;
B. Technical Concerns;
C. On-site Soil Remediation; and
D. Miscellaneous Concerns.

A. Feasibility of Alternatives

1. Comment: A resident asked if, under Alternative No. 3, it would be more effective to place extraction wells in closer proximity to the Caldwell Trucking Company property rather than placing them at the 15 proposed locations around Fairfield Township.

EPA Response: The primary difficulty in placing wells closer to the Caldwell Trucking Company property is that there is a problem in generating a capture zone radius sufficient to contain the contaminant plume. In addition, a substantial drawdown in water levels would occur in a more confined radius.

2. Comment: A resident inquired into the feasibility of placing extraction wells on residential properties under Alternative No. 3.

EPA Response: Fifteen well locations would be stationed on a combination of residential, commercial, and industrial properties. EPA recognizes that there may be problems in obtaining access to certain residential properties for the installation of extraction wells. In addition to well field location difficulty, there may be difficulty in obtaining access to install pipelines from the well field locations to the central treatment plant at the site and the effluent pipe from the treatment plant to the Passaic River. It is most likely that these lines would have to run along and across local and county roads.

3. Comment: A local official asked if it would it be possible to use or modify existing storm drains instead of installing new piping for the transport of water from the proposed treatment facility to be located on the Caldwell Trucking Company property to the river.

EPA Response: One of the problems with using existing storm drains is that the capacity that would be needed for capturing stormwater would otherwise be utilized. EPA can further examine the option for enlarging the existing storm drain during the design phase of the cleanup.

4. Comment: A resident stated that the Caldwell Trucking Company site was in a floodplain area and asked if EPA took into account the effect a hundred year flood would have upon any selected remediation systems.

EPA Response: EPA is aware of the site's location relative to the floodplain. During the design phase of the project, the factor of a 100 year flood would be taken into account.

B. Technical Concerns

1. Comment: A resident asked what impact EPA's proposed ground water pumping stations would have upon Fairfield Township's ability to produce water for commercial purposes.

EPA Response: EPA believes there will be no impact, or a minimal impact at worse, upon Fairfield Township's ability to produce water. EPA will be working with the Township during the design phase to examine what impacts, if any, selected alternatives would have upon municipal wells.

2. Comment: A resident inquired into the impacts of EPA's preferred alternatives on residential wells.

EPA Response: Residential wells clearly located within the plume area would likely be closed because of the contamination and the potential risk to the public related to well water use even for non-drinking purposes, and also because of the potential for cross-contamination to the municipal water supply. Those outside or on the fringe of the plume would not be affected.

3. Comment: A resident asked if the sealing of private wells would be on a recommendation basis or made mandatory by a Federal or State agency.

EPA Response: EPA would select only those wells within the contaminated plume from the Caldwell Trucking Company site and would highly recommend those wells be sealed, to insure that residents do not use the water for such purposes as lawn care or washing cars, which might have adverse impacts. The State of New Jersey, however, may require that selected wells be sealed.

4. Comment: One industrial company inquired about the possibility of EPA utilizing existing production wells in the Caldwell Trucking Company site cleanup.

EPA Response: EPA will evaluate the use of any existing wells during the design phase of the Caldwell Trucking Company site cleanup.

5. Comment: A resident asked about the dimensions of the proposed pump houses, and if there would be any noise generated in this operation.

EPA Response: The final dimensions of the pump houses would be determined during the design phase of the project. The pump houses would be approximately ten to twenty feet square, depending on how many wells would be stationed at that location. There would be a low background noise generated by the pumps.

6. Comment: A resident asked about the dimensions of the air stripping unit proposed for location on the Caldwell Trucking Company site property.

EPA Response: The exact dimensions would be calculated during the design phase of the project. However, the dimensions might be approximately forty feet high and six or eight feet in diameter for the main tower. In addition, there would be auxiliary equipment, such as blowers and piping.

C. On-Site Soils Remediation

1. Comment: A resident inquired into the time-frame required for treating on-site soil contamination and if the soils will always remain toxic.

EPA Response: The actual soils remediation will take approximately eighteen months and will involve the excavation of approximately 30,000 yards on the Caldwell Trucking Company site property. EPA will utilize a rotary kiln to vaporize volatiles, which is practically all the contamination there is.

2. Comment: A resident asked if the treated soils could be reused for fill.

EPA Response: EPA believes that the soils are primarily contaminated with volatiles which would be virtually eliminated during the rotary kiln process. However, there are some heavy metals which would not be removed. Therefore, EPA will be placing the excavated and treated soils in a secure landfill to be constructed on the Caldwell Trucking Company property site in accordance with Resource Conservation and Recovery Act (RCRA) requirements.

3. Comment: Several residents inquired into the possibility of hazardous waste from other sites being deposited in the landfill proposed for construction on the Caldwell Trucking Company property.

EPA Response: The landfill proposed for construction on the Caldwell Trucking Company property would be dedicated to the soils excavated on-site, and possibly that of contiguous property. Once the excavation process is completed, the landfill will be sealed.

4. Comment: Several residents expressed concern regarding the potential for hazardous emissions coming from the proposed rotary kiln to be stationed on the Caldwell Trucking Company site.

EPA Response: EPA must adhere to stringent State and Federal emissions standards and will constantly monitor all equipment to insure compliance with established standards. The rotary kiln

unit proposed for the site would contain all vaporized volatiles. If a mechanical problem should occur with the kiln, there is an automatic backup system which would instantly shut the unit down.

D. Miscellaneous Concerns

1. Comment: Several residents inquired into the extent that the Caldwell Trucking Company site contamination plume has affected area ground water.

EPA Response: During EPA's past and present ground water studies, four different sources of contamination were identified. Wells located in the other identified contamination areas have nothing to do with the Caldwell Trucking Company site. EPA and State authorities will be making efforts to clean up these other identified areas of contamination and stop the sources from further polluting the region's ground water.

2. Comment: Several residents inquired into EPA's role in reimbursing residents who, in the early 1980's, spent their own funds to connect to the municipal water supply.

EPA Response: Under the Superfund Law, EPA cannot compensate residents for connections to a municipal water system prior to EPA remedial site activities. There is the possibility that those residents could receive compensation from the New Jersey State Spill Fund. EPA will provide interested residents with the names of NJDEP officials that can provide information on New Jersey State Spill Fund eligibility.

3. Comment: A local official asked if Fairfield Township would qualify to receive reimbursement for monies expended in subsidizing the costs of residential connections to a municipal water supply in the early 1980's.

EPA Response: The Superfund Law is very specific as to how EPA can spend its funds. There are some provisions in the law for local and state government reimbursements. EPA will work with Fairfield Township officials to determine if any reimbursement can be made under existing legal requirements.

4. Comment: A resident who works in the vicinity of the Caldwell Trucking Company's property asked if there were any dangers from exposure to soils or waters running off of the property due to heavy rains.

EPA Response: EPA believes that there is no danger of exposure to volatiles from surface contact. At present, there are no surface volatiles on the Caldwell property, and only a limited

amount of heavy metals. Anything that could volatilize would have done so over the last 15 years.

IV. SUMMARY OF MAJOR WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA RESPONSES.

A public comment period was held from August 16, 1989 through September 15, 1989 to receive comments from the public on the draft RI/FS reports and the Proposed Plan. Written comments submitted during the period are summarized in this section, along with EPA's responses.

A. Letter from Sadat Associates, consultant to General Hose

1. Comment: The consultant claims that the volume of contaminated soil is less than the 5,000 cubic yards estimated by EPA's contractor, NUS Corporation.

EPA Response: The volume of soil can be verified later. The important issue is that the contaminated soil should be remediated so it ceases being a source of contaminants in the ground water.

2. Comment: The consultant claims that almost all the contamination found in the soil on the General Hose property actually migrated from Caldwell Trucking and hence General Hose is not a "primary" source of contamination.

EPA Response: The term "primary" is related to the volume of contaminated soil, which will be verified later. The contaminated soil on the General Hose property is a source of contamination to the ground water.

B. Letter from the RREEF real estate company, a major commercial property owner in the area (See Attachment A)

Comment: RREEF gave the EPA access for four monitoring wells on its property in 1987 and, therefore, would hope and expect that EPA look elsewhere in locating wells under this remedial action.

EPA Response: The RREEF property is a large area located close to Caldwell Trucking where the ground water is highly contaminated. For that reason, it may very likely be needed for extraction well locations under either the preferred remedy (Alternative 3) or the contingency remedy (Alternative 6).

C. Petition from 33 property owners in the plume area
(See Attachment B)

Comment: The petition requests that EPA not chose Alternative 3, which they feel is not a fair or reasonable solution, but rather should select and implement Alternative 6.

EPA Response: The petition confirms the problems related to implementation that EPA recognized and addressed in the Proposed Plan and at the Public Meeting. EPA will work closely with property owners and local officials during the pre-design phase to resolve problems which relate to the implementation of the final remedy.

V. REMAINING CONCERNS

Concerns raised by the community regarding remedial action and design activities at the Caldwell Trucking Company site will continue to be important community issues in the future.

Since the preferred alternatives involve the placement of extraction wells and related equipment on residential properties, both residents and Fairfield Township officials have taken a particular interest in the selection of the proposed alternatives.

Community Relations Activities

Caldwell Trucking Company (Off-Site Areas)

Public Meeting	November 1987
Fact Sheet	November 1987
Revised Community Relations Plan	February 1988
Proposed Plan	August 1989
Public Meeting	August 1989
Responsiveness Summary	September 1989

All community relations documents are available for public review in the designated site information repositories.

ATTACHMENT A

RREEF
The RREEF Funds

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

September 15, 1989

Mr. Edward J. Finnerty
Project Manager, ERRD
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

Re: Your Correspondence dated 8/31/89

Dear Mr. Finnerty:

Relative to your previous correspondence dated October 15, 1987, you installed four (4) ground water wells on our property at 6 Kingsbridge Road in Fairfield, N.J. As mentioned in your August 31, 1989 memo, you now want to install wells at 7 Kingsbridge Road.

We believe these new wells will cause some disturbance to the property and the tenants in this building.

Since RREEF permitted you to install ground water wells at the 6 Kingsbridge Road location, we cannot agree to additional wells on the property at 7 Kingsbridge Road. I am sure there are other properties where these new wells could be installed.

Thank you for your understanding in this matter.

Sincerely,

Nicholas A. Allegretti
Operations Manager

NAA/seb

cc: Ms. E. S. Cole

411 Hackensack Avenue
Hackensack, New Jersey 07601
(201) 488-2300

FAX (201) 488-6489

September 6, 1989

Mr. Edward J. Finnerty
Remedial Project Manager
U.S. Environmental Protection Agency
Room 711
26 Federal Plaza
New York, New York 10278

Dear Mr. Finnerty:

Attached please find a petition regarding the EPA's Alternative #3 - Proposal to build well fields on residential properties.

The residential community, consisting of Orlando Drive, Harding Drive West, Pier Lane and Toll Terrace are strongly opposed to Alternative #3 and have so stated this by signing this petition for the record.

The fact that these home owners were not notified properly regarding the EPA Meeting that was held August 30th is also a source of irritation to this community. The majority of residents would have liked to have been at the meeting August 30 to voice their opinions for the record. This matter could have grave consequences to the home owners and is of a serious nature. The articles in the Star Ledger/Caldwell Progress were obviously not enough notification. In the future we would like to be notified of meetings in a more sufficient manner so it will not be overlooked.

We are all aware of the magnitude of the problem of the contaminated water in well #7, however, we are all in agreement that Alternative #3 (wells on residential properties) is not a fair or reasonable solution. Therefore, we all agree that Alternative #6 (wells on commercial properties) should be used.

Our opinion on Alternative #3 is "NO".

Sincerely,

Residents Concerned About
Alternative #3

CC: MAYOR AND TOWN COUNCIL
230 Fairfield Road
Fairfield, New Jersey

Caldwell Progress
Caldwell, New Jersey

Nancy Odell	36 Harding Dr.	882-0022
Arthur Odell	36 Harding Dr	882-0022
Mr + Mrs R Romat	35 Harding Dr	882-0757
Mrs. Elizabeth Buffum	35 Harding Dr.	882-0757
Mr. + Mrs. D Pignataro	38 Harding Dr	227-8680
Mr and Mrs Tyski and Mhardu Patel		852-8127
Mr + Mrs Heenan Vesite	8 ORLANDO DR.	227/8800
Mr + Mrs Carl Forth	9 Orlando Dr,	227-0559
Mr + Mrs. S. Vaicekauskas	12 Orlando Dr.	227-6173
Mrs Anne Lasasso	12 Orlando Dr.	227-6173
Mr + Mrs Joseph Napolitano	6 Orlando Dr	227-0878
Mr + Mrs. Louis Perrone	2 Orlando Dr	- 227-3932
Mr Louis Perrone Jr.	2 Orlando Dr	227-3932
Mr + Mrs M. Gale	20 Pier Ln	882-1518
Mr + Mrs Vito Russoniello	5 Orlando Dr.	575-9516
Mr Mrs. Enrico Violanto	16 Orlando Dr	227-[illegible]
Susan Strauino	16 Orlando Dr.	227-8580
Joe + Nancy Hebert	36 Harding Dr.	882-0030
Christian Walker	74 Pier Lane	227-5860
Mr + Mrs Joseph Liselle	101 Rest Lane	227-4438
Mr. + mrs. Carmine Somma	1 Orlando Drive	575 6246
Paula + John Roselle	103 Pier La	575-9303
758-8940 Mrs. [illegible]	102 Pier Lane	227-5502
Michael D. Amijian	18 Toll	808-9706
Gayle S. Butler	9 Toll	575-6373
Dorothy G. Smith	7 Toll Terr	227-5692
Tim + Mrs Hugh Lloyd	5 Toll Terrace	227-5162

Mr + Mrs Drago - 17 Orlando Dr. 575-2792
Mr - Mrs. C. Menias 15 Orlando Dr. 575-4536
R.S. (ROSS 31 Pier Ln 882-8425
Kim Holswade 39 Pier Ln 805-0728
Peter Campbell 43 Pier Ln 575-0383
Nancy Moran
CROFT REALTY MEMBER 40 Pier Lane 227-0139
Annette Ludd 50 Pier Lane 227-4161
Donna Rubin 33 Pier Lane 882-8716
Gail Plumstead 24 Orlando dr 227-5601
Alexx Plumstead 24 Orlando dr " "
Mary Ann Langhein 55 Pier Lane 227-5461
Mr + Mrs. C. Iguestini 18 Orlando Dr. 575-6
Barbara Fitzpatrick 20 Orlando Dr. 227-6876
Jean + Ed Peterson 20 Orlando Dr 227-687